

CURRICULUM VITAE

Personal Details

Name

Julian David Borrill

Date Of Birth

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Current Institutions

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Degrees

1984: University of Cambridge, BA in Mathematics & Political Science – 2:1.
1990: University of London, MSc in Astrophysics – Pass with distinction.
1990: University of London, MSc in Information Technology – Pass with distinction.
1993: University of Sussex, DPhil in Theoretical Physics, ‘The Cosmology Of Global Texture’.

Employment

1993 — 1995: Postdoctoral Research Associate, Imperial College.
1995 — 1997: Postdoctoral Research Associate, Dartmouth College.
1997 — 1999: Visiting Research Fellow, NERSC, Lawrence Berkeley National Laboratory,
Center for Particle Astrophysics, UC Berkeley.
1999 onward: Staff Scientist, Computational Research Division, Lawrence Berkeley National Laboratory,
& Space Sciences Laboratory, University of California at Berkeley.

Academic Details

Conference Presentations

- 1994: ‘Topological Defects: Numerical Approaches’, Newton Institute, Cambridge
‘First AP-1000 Users’ Workshop’, Imperial College.
- 1996: ‘Topological Defects and the Microwave Background’, Cambridge.
‘Non-Equilibrium Phase Transitions’, Santa Fe.
- 1997: ‘Topological Defects and the Microwave Background’, London.
‘Advanced Information Systems Research Projects’, NASA Goddard.
‘CMB Data Analysis and Parameter Extraction’, INPAC/ITP, Santa Barbara.
- 1998: ‘PASCOS-98’, North Eastern University, Boston.
‘Massive Astrophysical Datatsets’, DIMACS, Princeton.
‘3K Cosmology Euroconference’, Universita La Sapienza, Rome.
‘19th Texas Symposium on Relativistic Astrophysics’, Paris.
- 1999: ‘Inner Space, Outer Space II’, Fermi National Accelerator Laboratory.
‘5th European SGI/Cray MPP Workshop’, CINECA, Bologna.
‘Advanced Information Systems Research Projects’, South West Research Institute, Boulder.
‘Key Tests for Cosmogenic Theories’, Newton Institute, Cambridge.
- 2000: ‘XXth Moriond Workshop: Energy Densities In The Universe’, Moriond.
‘9th Marcel Grossman Meeting’, Rome.
‘Mining The Sky’, Max Planck Institute, Garching.
‘ACTS Toolkit Workshop’, NERSC, Berkeley.
‘Advanced Information Systems Research Projects’, South West Research Institute, Boulder.
- 2001: ‘Accelerating Discovery with Supercomputers’, AAAS Annual Meeting, San Francisco.
‘ACTS Toolkit Workshop’, NERSC, Berkeley.
‘Advanced Information Systems Research Projects’, Johns Hopkins University, Baltimore.
- 2002: ‘CMB Polarization: Detection & Analysis’, College de France, Paris.
‘Advanced Information Systems Research Projects’, NASA Ames.
‘Computing The Cosmos – From The Big Bang To Black Holes’, Supercomputing 2002, Baltimore.

Teaching

- 1995: Graduate Lecture Course ‘C and Parallel Programming’, Imperial College.
- 1996: Graduate Lecture Course ‘C for Fortran Survivors’, Dartmouth College.
- 2000: Guest Lecturer, ‘Applications in Parallel Computing’, UC Berkeley.
- 2001: Guest Lecturer, ‘Applications in Parallel Computing’, UC Berkeley.
- 2002: Guest Lecturer, ‘Applications in Parallel Computing’, UC Berkeley.

Students

- 1998: Mark Krumholz, UC Berkeley,
LBNL Summer Student Project – ‘The Parallel Lattice Analysis Generalised User Environment’.
- 1999: Mark Krumholz, UC Berkeley,
LBNL Summer Student Project – ‘An Implementation Of The MAP CMB Data Analysis Paradigm’.
Jon Urrestilla, University of the Basque Country,
LBNL Summer Student Project – ‘The Formation And Evolution Of Electroweak Strings’.
Peter Shepard, Brown University, (jointly supervised with Professor Robert Brandenberger).
LBNL Summer Student Project – ‘The Distribution Of Cosmic Strings’.
- 2000: Plamen Koev, UC Berkeley, (jointly supervised with Professor James Demmel)
Graduate Student – Numerical linear algebra applied to CMB data analysis.
- 2001: Jon Urrestilla, University of the Basque Country,
LBNL Summer Student Project – ‘Early Universe Field Theory Simulation Protocols’.

Workshops

2000: ‘MADCAP Users Workshop’, NERSC, Berkeley.

2003: ‘PLANCK Data Analysis Workshop’, NERSC, Oakland.

Journal Publications

1. ‘Initial Conditions for Global Texture’, Julian Borrill, Edmund J. Copeland, and Andrew R. Liddle, Phys Lett **B258** 310 (1991).
2. ‘The Collapse of Spherically Symmetric Textures’, Julian Borrill, Edmund J. Copeland, and Andrew R. Liddle, Phys Rev **D46** 524 (1992).
3. ‘Characteristics of Unwinding Textures’, Julian Borrill, Edmund J. Copeland, and Andrew R. Liddle, Phys Rev **D47** 4292 (1993).
4. ‘On the Rate of Unwinding of Global Texture’, Julian Borrill, Phys Rev **D47** 4298 (1993).
5. ‘Texture-Induced Microwave Background Anisotropies’, Julian Borrill, Edmund J. Copeland, Andrew R. Liddle, Albert Stebbins and Shoba Veeraraghavan, Phys Rev **D50** 2469 (1994), astro-ph/9403005
6. ‘Numerical Methods In Cosmological Global Texture Simulations’, Julian Borrill, Phys Rev **D50** 3676 (1994), astro-ph/9403006
7. ‘Thermal Phase Mixing During First Order Phase Transitions’, Julian Borrill and Marcelo Gleiser, Phys Rev **D51** 4111 (1995), hep-ph/9410235
8. ‘Defect Production In Slow First Order Transitions’, Julian Borrill, T.W.B. Kibble, Tanmay Vachaspati and Alexander Vilenkin, Phys Rev **D52** 1934 (1995), hep-ph/9503223
9. ‘On The Absence Of Open Strings In A Lattice-Free Simulation Of Cosmic String Formation’, Julian Borrill, Phys Rev Lett **76** 3255 (1996), hep-ph/9511295
10. ‘Matching Numerical Simulations To Continuum Field Theories: A Lattice Renormalization Study’, Julian Borrill and Marcelo Gleiser, Nuc Phys **B483** 416 (1997), hep-lat/9607026
11. ‘Semilocal String Formation in Two Dimensions’, Ana Achúcarro, Julian Borrill and Andrew R. Liddle, Phys Rev **D57** 3742 (1998), hep-ph/9702368
12. ‘Power Spectrum Estimators For Large CMB Datasets’, Julian Borrill, Phys Rev **D59** 7302 (1999), astro-ph/9712121
13. ‘The Formation Rate Of Semilocal Strings’, Ana Achúcarro, Julian Borrill and Andrew R. Liddle, Phys Rev Lett **82**, 3742 (1999). hep-ph/9802306
14. ‘On The Formation Of Non-Topological String Networks’, Ana Achúcarro, Julian Borrill and Andrew R. Liddle, Physica **B255**, 116 (1998). hep-ph/9810459
15. ‘Measurement of a Peak in the Cosmic Microwave Background Power Spectrum from the North American test flight of BOOMERANG’, P.D. Mauskopf et al, ApJ **536**, L59 (2000). astro-ph/9911444
16. ‘A Measurement of Omega from the North American test flight of BOOMERANG’, A. Melchiorri et al, ApJ **536**, L63 (2000). astro-ph/9911445
17. ‘A Flat Universe from High-Resolution Maps of the Cosmic Microwave Background Radiation’, P. de Bernardis et al, Nature **404**, 955, (2000). astro-ph/0004404
18. ‘First Estimations of Cosmological Parameters From BOOMERANG’, A.E. Lange et al, Phys Rev **D63** (2001). astro-ph/0005004
19. ‘MAXIMA-1: A Measurement of the Cosmic Microwave Background Anisotropy on angular scales of 10 arcminutes to 5 degrees’, S. Hanany et al, ApJ **545**, L5, (2000). astro-ph/0005123

20. ‘Constraints on Cosmological Parameters from MAXIMA-1’, A. Balbi et al, ApJ **545**, L1, (2000). astro-ph/0005124
21. ‘Asymmetric Beams in Cosmic Microwave Background Anisotropy Experiments’, J. H. P. Wu et al, ApJ Supp **132**, 1 (2001). astro-ph/0007212
22. ‘Cosmology from Maxima-1, Boomerang and COBE/DMR CMB Observations’, A. H. Jaffe et al, Phys Rev Lett **86**, 16 (2001). astro-ph/0007333
23. ‘Tests for Gaussianity of the MAXIMA-1 CMB Map’, J. H. P. Wu et al, Phys Rev Lett **87** (2001). astro-ph/0104248
24. ‘A High Spatial Resolution Analysis of the MAXIMA-1 Cosmic Microwave Background Anisotropy Data’, A. T. Lee et al, ApJ **561** L1 (2002). astro-ph/0104459
25. ‘A measurement by BOOMERANG of multiple peaks in the angular power spectrum of the cosmic microwave background’, C. B. Netterfield et al, ApJ. **571** 604 (2002). astro-ph/0104460
26. ‘Cosmological implications of the MAXIMA-I high resolution Cosmic Microwave Background anisotropy measurement’, R. Stompor et al, ApJ **561** L7 (2001). astro-ph/0105062
27. ‘Multiple Peaks in the Angular Power Spectrum of the Cosmic Microwave Background: Significance and Consequences for Cosmology’, P. de Bernardis et al, ApJ **564** 559 (2002). astro-ph/0105296
28. ‘The Evolution And Persistence Of Dumbbells In Electroweak Theory’, Jon Urrestilla, Ana Achucarro, Julian Borrill and Andrew R. Liddle, JHEP **208** 33 (2002). hep-ph/0106282
29. ‘Making Maps Of The Cosmic Microwave Background: The MAXIMA Example’, R. Stompor et al, Phys Rev **D65** (2002). astro-ph/0106451
30. ‘An Estimate Of The Cosmological Bispectrum From The MAXIMA-1 CMB Map’, M. G. Santos et al, Phys Rev Lett **88**, 241 (2002). astro-ph/0107588
31. ‘Frequentist Estimation of Cosmological Parameters from the MAXIMA-1 Cosmic Microwave Background Anisotropy Data”, M. E. Abroe et al, MNRAS **334** 1 (2002). astro-ph/0111010
32. ‘Search For Non-Gaussian Signals In The BOOMERanG Maps: Pixel-Space Analysis’, G. Polenta et al, ApJ **572** L27 (2002). astro-ph/0201133
33. ‘The BOOMERanG Experiment And The Curvature Of The Universe’, S. Masi et al, PPNP **48** 243 (2002). astro-ph/0201137
34. ‘Multiple Methods for Estimating the Bispectrum of the Cosmic Microwave Background with Application to the MAXIMA Data’, M. G. Santos et al, submitted to MNRAS (2002). astro-ph/0211123
35. ‘Improved Measurement of the Angular Power Spectrum of Temperature Anisotropy in the CMB from Two New Analyses of BOOMERANG Observations’, J. E. Ruhl et al, submitted to ApJ (2002). astro-ph/0212229
36. ‘Determining Foreground Contamination in CMB Observations: Diffuse Galactic Emission in the MAXIMA-I Field’, A. H. Jaffe et al, submitted to ApJ. (2003). astro-ph/0301077
37. ‘Observations of Galactic and Extra-galactic Sources From the BOOMERANG and SEST Telescopes’, K. Coble et al, submitted to ApJS (2003). astro-ph/0301599

Referees

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